23. (New) The method as recited in claim 22, further comprising the steps of:

operating the emission control system in a normal operating phase with a lean composition to store sulfur contained in the exhaust gas; and

operating the emission control system in a regeneration phase with a rich exhaust composition to release stored sulfur as at least one gaseous compound.

24. (New) The method according to claim 23, wherein the step of operating the emission control system in the regeneration phase includes the substep of raising an exhaust temperature to between 550 °C and 700 °C.

25. (New) An emission control system, comprising:

a particle filter, and

an arrangement disposed upstream from the particle filter, the arrangement being configured to prevent development of ash upstream from the particle filter by transforming or maintaining at least one of the compounds being responsible for the ash formation in the gaseous state, and including:

means for collecting at least a portion of the ash-forming compounds of sulfur contained in the exhaust gas; and

means for converting the collected ash-forming compounds of sulfur into gaseous compounds of sulfur that do not form ash.--.

REMARKS

I. Introduction

With the cancellation without prejudice of claims 1 to 13, and with the addition of new claims 14 to 25, claims 14 to 25 are pending in the present application. In view of the foregoing amendments and the following remarks, it is respectfully submitted that all of the presently pending claims are allowable, and reconsideration is respectfully requested.

Applicants note with appreciation the acknowledgment that the drawings filed on June 20, 2001 are accepted.

Applicants note with appreciation the acknowledgment of the claim for foreign priority and the indication that all certified copies of the priority documents have been received.

II. Rejection of Claims 1 and 9 Under 35 U.S.C. § 102(e)

Claims 1 and 9 were rejected under 35 U.S.C. § 102(e) as anticipated by U.S. Patent No. 6,003,303 ("Peter-Hoblyn et al."). While Applicants respectfully disagree with the rejection of the present claims, for the purposes of expediting the prosecution of this application, and without prejudice, Applicants hacve canceled claims 1 and 9. Therefore, Applicants respectfully submit that the present rejection is moot and request that the rejection be withdrawn.

III. Rejection of Claims 1 to 13 Under 35 U.S.C. § 103(a)

Claims 1 to 13 were rejected under 35 U.S.C. § 103(a) as unpatentable over U.S. Patent Application Publication No. 2001/0035006 ("Dou et al.") in view of U.S. Patent No. 5,850,735 ("Araki et al."). While Applicants respectfully disagree with the rejection of the present claims, for the purposes of expediting the prosecution of this application, and without prejudice, Applicants have canceled claims 1 to 13. Therefore, Applicants respectfully submit that the present rejection is moot and request that the rejection be withdrawn.

IV. New Claims

New claims 14 to 25 have been added herein. Support for new claims 14 to 25 is found, for example, at page 2, line 35 to page 3, line 3, and at page 3, lines 5 to 8 of the Specification. New claims 14, 22 and 25 are independent. New claim 14 relates to an emission control system that includes a particle filter and an arrangement disposed upstream from the particle filter and configured to prevent development of ash upstream from the particle filter by transforming or maintaining at least one of the compounds being responsible for the ash formation in the gaseous state. Claim 14 recites that the arrangement includes a device configured to collect at least a portion of the ash-forming compounds of sulfur contained in the exhaust gas and a device configured to convert the collected ash-forming compounds of sulfur into gaseous compounds of sulfur that do not form ash.

Claims 22 relates to a method for operating an emission control system, the emission control system including a particle filter and an arrangement disposed upstream from the filter, the arrangement configured to prevent development of ash upstream from the particle filter. Claim 22 recites that the method includes the step of maintaining at least a portion of the compounds being

responsible for the ash formation in a gaseous state. Claim 22 recites that the method also includes the step of collecting at least a portion of the ash-forming compounds of sulfur contained in the exhaust gas. In addition, claim 22 recites that the method includes the step of converting the collected ash-forming compounds of sulfur into gaseous compounds of sulfur that do not form ash.

New claim 25 relates to an emission control system that includes a particle filter and an arrangement disposed upstream from the particle filter and configured to prevent development of ash upstream from the particle filter by transforming or maintaining at least one of the compounds being responsible for the ash formation in the gaseous state. Claim 14 recites that the arrangement includes means for collecting at least a portion of the ash-forming compounds of sulfur contained in the exhaust gas and means for converting the collected ash-forming compounds of sulfur into gaseous compounds of sulfur that do not form ash.

Applicants respectfully submit that U.S. Patent No. 6,003,303 ("Peter-Hoblyn et al.") does not anticipate the present claims for the following reasons.

Peter-Hoblyn et al. purport to relate to a combination of mechanical devices and fuel additives to reduce the emissions of pollutants from diesel engines. In one series of embodiments, diesel emissions of NO_x and particulates are reduced, simultaneously with gaseous hydrocarbons and carbon monoxide, by the combined use of exhaust gas recirculation or engine timing modification with a particulate trap and a platinum group metal catalyst composition. In another embodiment, a multi-metal catalyst composition comprising a combination of a platinum metal catalyst composition and at least one auxiliary catalyst metal composition, especially cerium or copper, is employed to provide catalyst metal to the exhaust system including a diesel trap to lower the balance point of the particulate trap (the temperature at which the rate of loading equals the rate of regeneration) while also lowering the emissions of carbon monoxide and unburned hydrocarbons. Peter-Hoblyn et al. further purport that various embodiments show selective maintenance of low oxidation of SO_2 to SO_3.

It is respectfully submitted that Peter-Hoblyn et al. fail to disclose, or even suggest, an arrangement disposed upstream from the particle filter and that is configured to prevent development of ash upstream from the particle filter by transforming or maintaining at least one of the compounds being responsible for the ash formation in the gaseous state, as recited in claim 14, 22 and 25. Specifically,

the sulfur in the exhaust, which is primarily responsible for the formation of ash, is converted into compounds that do not form ash, e.g., stored sulfur released in gaseous form from a SO_x trap or collector in a regeneration phase, in order to prevent ash-forming compounds of sulfur, e.g., sulfates, from forming in the exhaust. Specification at p. 3, lines 5 to 8 and lines 11 to 17. In contrast, Peter-Hoblyn et al. purport to describe an exhaust gas aftertreatment system that has a particle filter and an associated operating method for decreasing particle emission. Peter-Hoblyn et al. purport to solve the problem of the clogging of the particle filter with soot particles by adding to the fuel, to the combustion air or to the combustion gases catalytically effective substances which lower the combustion temperature of the soot particles deposited on the particle filter. The addition of these catalytically effective substances increases the combustion speed of the deposited soot particles at comparable temperatures as compared to an operating manner without the addition of catalytic substances. Thus, Peter-Hoblyn et al. are concerned with the "balance point", i.e. the temperature at which the loading rate of the particle filter (with soot particles) is the same as the regeneration rate, **not** with reducing the loading of the particle filter with ash, e.g., incombustible solid particles. For instance, Peter-Hoblyn et al. describe at col. 8, lines 33 to 55, the lowering of the balance point, e.g., the burning off of the soot, and has nothing to do with avoiding ash formation. Similarly, Peter-Hoblyn et al. describe at col. 27, lines 23 to 35, and col. 2, lines 17 to 19, the increase of particle emissions, which is based on the tendency of SO_3 to dissolve in the water vapor condensed on the particles, e.g., the formation of aerosols by SO_3 and sulfuric acid formation, and not the formation of ash. In contrast to the Examiner's contention, the SO_3-based particles, in particular SO_3 aerosols, are of a fluid, not gaseous, nature, and occur in the particle filter itself, not upstream from the particle filter, as recited in claims 14, 22 and 25.

Thus, it is respectfully submitted that Peter-Hoblyn et al. do not disclose, or even suggest, an arrangement disposed upstream from the particle filter and that is configured to prevent development of ash upstream from the particle filter by transforming or maintaining at least one of the compounds being responsible for the ash formation in the gaseous state, as recited in new claims 14, 22 and 25.

As for claims 15 to 21, which ultimately depend from claim 14 and therefore include all of the limitations of claim 14, and claims 23 and 24, which ultimately depend from claim 22 and therefore include all of the limitations of claim

22, it is respectfully submitted that Peter-Hoblyn et al. do not anticipate these dependent claims for at least the same reasons given above in support of the patentability of claims 14 and 22.

Furthermore, it is respectfully submitted that the combination of U.S. Patent Application Publication No. 2001/0035006 ("Dou et al.") in view of U.S. Patent No. 5,850,735 ("Araki et al.") does not render obvious the present claims for the following reasons.

Dou et al. purport to relate to an exhaust gas catalyst system that includes a sulfur trap warm-up catalyst, housed within the exhaust stream that includes a sulfur scavenger component and a NO_x adsorber catalyst, housed within the exhaust stream down-stream from the sulfur trap in an underfloor position. Dou et al. further purport to relate to a method of reducing sulfur poisoning of a nitrogen oxide adsorber, housed within an exhaust gas catalyst system, by placing a sulfur cap within the exhaust stream upstream from a NO_x adsorber, wherein the sulfur trap comprises a sulfur scavenger component.

Araki et al. purport to relate to a method for purifying exhaust gas of an internal combustion engine by supplying fuel to an exhaust gas passage upstream of a sulfate absorbent in order to raise the temperature of the exhaust gas flowing into the sulfate absorbent. By raising the exhaust gas temperature above a predetermined peak temperature, the ratio of SO_3 in the SO_x mixture released from the sulfate absorbent is caused to decrease. The temperature is selected in such a manner that, when SO_x is released from the sulfate absorbent, the amount of SO_3, i.e., the amount of particulate matter, released into the atmosphere is relatively low.

It is respectfully submitted that neither Dou et al. nor Araki et al. discloses, or even suggests, either separately or in combination, all of the claim limitations recited in new claims 14, 22 and 25. For instance, neither Dou et al. nor Araki et al. discloses, or even suggests, either separately or in combination, an arrangement disposed upstream from the particle filter and that is configured to prevent development of ash upstream from the particle filter by transforming or maintaining at least one of the compounds being responsible for the ash formation in the gaseous state, as recited in claims 14, 22 and 25. In contrast, Araki et al. seek to instead minimize the amount of SO_3, i.e., particulate matter, released from a sulfate absorbent into the atmosphere. Specifically, Araki et al. describe a method for purifying the exhaust gas of an internal combustion engine. Col. 2, lines 38 to

39. The exhaust gas of an internal combustion engine containing sulfur oxide is contacted with a sulfate absorbent at a temperature lower than a releasing temperature. Col. 2, lines 40 to 43. The temperature of the sulfate absorbent after it has absorbed sulfur oxide is then raised to a predetermined temperature higher than the releasing temperature to cause the sulfate absorbent to release the absorbed sulfur oxide. Col. 2, lines 43 to 47. The sulfate absorbent absorbs sulfur oxide in the exhaust gas when the temperature is lower than the releasing temperature and releases the absorbed sulfur oxide when the temperature becomes higher than the releasing temperature. Col. 2, lines 47 to 51. The predetermined temperature to which the sulfate absorbent is heated is selected in such a manner that the ratio of the sulfur trioxide component in the sulfur oxide mixture released from the sulfate absorbent at this predetermined temperature is lower than the ratio of the sulfur trioxide in the sulfur oxide mixture released from the sulfate absorbent at the releasing temperature. Col. 2, lines 51 to 57. Thus, Araki et al. do not disclose, or even suggest, an arrangement disposed upstream from the particle filter and that is configured to prevent development of ash upstream from the particle filter by transforming or maintaining at least one of the compounds being responsible for the ash formation in the gaseous state. Dou et al., on the other hand, seek to prevent sulfur poisoning of an NO_x adsorbent by employing a sulfur trap in a NO_x adsorber system. Specifically, Dou et al. purport that an exhaust gas catalyst system may provide improved management of NO_x and sulfur components through incorporation of a sulfur trap upstream from a NO_x adsorber, wherein the sulfur trap includes a sulfur scavenging component, such as barium, strontium or magnesium, and optionally an oxidation catalyst and/or a lean NO_x catalyst. Page 2, par. 35. Thus, there is no disclosure or suggestion by Dou et al. regarding an arrangement disposed upstream from the particle filter and that is configured to prevent development of ash upstream from the particle filter by transforming or maintaining at least one of the compounds being responsible for the ash formation in the gaseous state.

It is therefore respectfully submitted that the combination of Dou et al. and Araki et al. does not render obvious new claims 14, 22 and 25.

As for claims 15 to 21, which ultimately depend from claim 14 and therefore include all of the limitations of claim 14, and claims 23 and 24, which ultimately depend from claim 22 and therefore include all of the limitations of claim

22, it is respectfully submitted that the combination of Dou et al. and Araki et al. does not render obvious these dependent claims for at least the same reasons given above in support of the patentability of claims 14 and 22.

V. Conclusion

Attached hereto is a marked-up version of the changes made to the claims by the current Amendment. The attached page is captioned "**Version with Markings to Show Changes Made**."

It is therefore respectfully submitted that the presently pending claims are allowable. All issues raised by the Examiner having been addressed, an early and favorable action on the merits is earnestly solicited.

Respectfully submitted,

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Version with Markings to Show Changes Made

IN THE CLAIMS:

Claims 1 to 13 have been canceled without prejudice.

New claims 14 to 25 have been added.